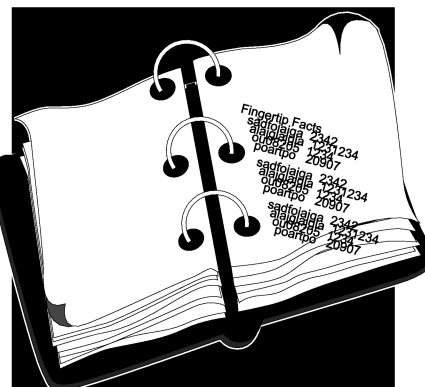


Chapter 12



LOUISIANA DEPARTMENT OF NATURAL RESOURCES

Fingertip Facts

This factsheet contains statistical energy information—conversion factors, R-values, fuel prices, energy efficiency recommendations, and climatic data for Louisiana. It serves as a reference guide for those seeking a quick answer to an energy question.

Abbreviations

<i>Btu</i>	British Thermal Unit, the amount of heat needed to increase the temperature of one pound of water one degree Fahrenheit (about the amount of heat released when a kitchen match burns)
<i>1° F</i>	one degree Fahrenheit
<i>MMBtu</i>	million Btu
<i>kwh</i>	kilowatt-hour
<i>KW</i>	kilowatt
<i>cf</i>	cubic foot
<i>cfm</i>	cubic foot per minute
<i>bbl</i>	barrel
<i>gal</i>	gallon

Energy and Fuel Data

Energy Units

1 kwh = 3,412 Btu
1 MMBtu = 293 kwh
1 Btu = 252 calories
1 Btu = 1,055 joules

Power Units

1 watt = 3,412 Btu/hour
1 kw = 3.412 MMBtu/hour
1 horsepower = 746 watts
1 ton of heating/cooling = 12,000 Btu/hour

Fuel Units

1 cf of natural gas = 1,000 Btu
1 therm = 100,000 Btu
1 bbl fuel oil = 42 gallons
1 bbl fuel oil = 5.8 MMBtu
1 ton fuel oil = 6.8 bbl
1 gallon fuel oil = 136,000 Btu
1 gallon propane = 91,500 Btu
1 ton bituminous (Eastern) coal = 21–26 MMBtu
1 ton subbituminous (Western) coal = 14–18 MMBtu
1 cord wood = 128 cubic feet (4 ft x 4 ft x 8 ft)
1 cord dried oak = 23.9 MMBtu
1 cord dried pine = 14.2 MMBtu

Average Daily Solar Radiation

(Btu/sq ft on a Vertical, South-Facing Surface)

	Latitude	January	July
Baton Rouge	30.5	889	786
Lake Charles	30.1	790	795
New Orleans	30.0	950	801
Shreveport	32.5	920	864

Insulating Values

The R-value is the measure of resistance to heat flow via conduction. R-values vary according to specific materials and installation.

Insulation	R-value per inch
Fiberglass batts/rolls	3.1 to 4.3
Fiberglass loose-fill	2.2 to 2.6
Rock wool loose-fill	2.6
Cellulose	3.7
Vermiculite	2.1
Perlite	3.3

Rigid Insulation Boards	R-value per inch
Fiberboard sheathing (noninsulating blackboard)	2.6
Expanded polystyrene (beadboard)	4.0
Extruded polystyrene	5.0
Polyisocyanurate and polyurethane	6.8 to 7.2

Building Materials	R-value per inch
Drywall	0.9
Wood siding	0.9 to 1.2
Common brick	0.2
Lumber and siding	
Hardwood	0.8 to 0.94
Softwood	0.9 to 1.5
Plywood	1.3
Particle Board (medium density)	1.1
Asbestos-cement (entire shingle)	0.21
Concrete block (entire block)	
Unfilled	0.4 to 1.2
Filled with vermiculite/perlite	1.3 to 2.0
Filled with cement mortar	.2

Dead Air Spaces	R-value of air space
1/2-inch	0.75
3/4-inch	0.77
3-1/2-inch	0.80
3-1/2-inch, reflecting surface on one side	1.6
3-1/2-inch, reflecting surface both sides	2.2

HVAC Equipment Efficiencies

Annual Fuel Utilization Efficiency (AFUE) shows the average annual efficiency at which fuel-burning or electric resistance furnaces operate.

Coefficient of Performance (COP) measures how many units of heating or cooling are delivered for every unit of electricity used in a heat pump or air conditioner.

Heating Season Performance Factor (HSPF) measures the average number of Btu of heating delivered for every watt-hour of electricity used by a heat pump.

Seasonal Energy Efficiency Ratio (SEER) measures how readily air conditioners convert electricity into cooling—a SEER of 10 means the unit provides 10,000 Btu's of cooling per kilowatt-hour of electricity.

Ranges of Efficiency	Low	Moderate	High
Gas furnaces (AFUE)	0.78	0.80	0.95
Air conditioning (SEER)	10	12	15
Heat Pump (HSPF)	6.8	7.2	8.0

Climatic Data for Louisiana

Heating Degree Days (HDD) are a measure of how cold a location is in winter.

Winter and Summer Design Temperatures should be used by heating and cooling contractors when sizing heating and cooling systems. They show the temperatures that are exceeded in summer or dipped below in winter only 2.5% of the time.

Equivalent Full Load Compressor Hours (EFLCH) add up the total minutes a typical air conditioner would operate per year and divide by 60 minutes per hour.

	Winter Design Temp	HDD	Summer Design Temp	EFLCH
Location				
New Orleans	33	1,400	92	1,880
Lake Charles	31	1,490	93	1,820
Lafayette	30	1,550	94	1,760
Baton Rouge	29	1,610	93	1,730
Alexandria	27	2,000	94	1,560
Shreveport	25	2,160	96	1,500
Monroe	25	2,310	96	1,450



Average Monthly Temperatures

	Baton Rouge	Lake Charles	New Orleans	Shreveport
JAN	51	52	53	47
FEB	54	55	56	51
MAR	60	60	61	57
APR	68	69	69	66
MAY	75	75	75	73
JUN	80	81	80	80
JUL	82	82	82	83
AUG	82	82	82	83
SEP	78	78	78	77
OCT	69	70	70	68
NOV	59	60	60	56
DEC	53	54	55	49
YEAR	67	68	68	66

Comparative Climatic Data

	Average Temperature	Heating Degree Days*	Equivalent Full Load Compressor Hours*
Honolulu, HI	77	0	3,510
Miami, FL	76	200	2,940
Brownsville, TX	74	600	2,590
Houston, TX	69	1,410	1,880
Mobile, AL	67	1,620	1,620
Tucson, AZ	68	1,700	1,720
Jackson, MS	65	2,260	1,470
Birmingham, AL	62	2,710	1,340
Atlanta, GA	61	2,990	1,170
Memphis, TN	62	3,210	1,300
New York, NY	55	4,880	770
Washington, DC	54	5,010	900
Chicago, IL	51	6,640	650
Glasgow, MT	42	9,000	500
Fargo, ND	41	9,250	490
Caribou, ME	39	9,770	300
International Falls, MN	37	10,600	370
Fairbanks, AK	20	14,290	190

* See Page 172 for a definition of these terms

Notes: